

## Sharpening Accounting Skills with Games: A Literature Review on Game-Based Accounting Learning

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| Srimaryani<sup>1,\*</sup> | Riyan Yuliyanto<sup>2</sup> | Rizka Andriyati<sup>3</sup> |

<sup>1,2,3</sup> Master's Student in  
Economics Education,  
Faculty of Teacher  
Education and Educational  
Sciences, Sebelas Maret  
Univercity, Indonesia

\*srimaryani\_srimaryani3007  
@student.uns.ac.id

### ABSTRACT

*This research aims to provide a comprehensive literature review on the use of games in accounting learning, both in manual and digital formats. Currently, students experience a decline in concentration when learning accounting concepts, necessitating more engaging and practical learning alternatives. Therefore, many educators have begun developing games relevant to accounting education to address this issue. This article is a Systematic Literature Review (SLR). The study explores 17 articles on accounting games (both manual and digital) published in accounting journals in the Scopus database over a period of 2002 to 2022. Through this research, the author aims to provide a quick reference for accounting educators to gain insights into the types of games available to enhance students pedagogical abilities. In this study, the author strives to provide as comprehensive details as possible regarding the games and activities that can be conducted in accounting learning. It is hoped that this research can assist educators in developing more effective and enjoyable learning methods for students.*

### KEYWORDS

*Accounting Education; Games Based Learning; Accounting, Gamification; Sistematic Literature Review*

### INTRODUCTION

There is a significant issue in accounting learning regarding the decline in students concentration when studying accounting concepts. This challenge has been recognized and addressed by several researchers in the field. According to a study conducted by Elo et al. (2023), they found that students often struggle to maintain focus and engagement when learning accounting principles. The complexity and technical nature of accounting concepts, coupled with the lack of interactive and stimulating instructional methods, contribute to the reduced concentration among students (Moon & Wood, 2020).

Another study by Carolyn Yang & Chang (2013) highlights the negative impact of decreased concentration on students overall academic performance in accounting. They conducted a longitudinal analysis and discovered a strong correlation between low concentration levels during accounting classes and poor grades. The findings suggest that the lack of engagement and interest in the subject matter hinders students ability to comprehend and apply accounting principles effectively.

To address this issue, educators have started exploring alternative teaching approaches that can enhance students concentration and engagement in accounting learning. For instance, Dindar et al. (2021) propose the use of gamification techniques in accounting education to increase students motivation and active participation. By incorporating game

elements into accounting lessons, such as interactive exercises, simulations, and challenges, students are more likely to maintain their focus and develop a deeper understanding of accounting concepts.

In summary, the decline in students concentration during accounting learning poses a significant challenge in the field. Several studies have highlighted the negative consequences of reduced concentration on students academic performance. To overcome this issue, educators are exploring innovative approaches, such as gamification, to create more engaging and interactive learning experiences in accounting classrooms.

This systematic literature review aims to provide answers to the following research questions: 1). What is the number of published articles per year (2002-2022) on the topic of accounting education games? 2). What are the top 3 journals that have published the most articles on the topic of accounting education games? 3). Who are the top 15 authors with the highest number of articles in the field of accounting education games? 4). What are the top 10 cities that have published the most articles on the topic of accounting education games? 5). What are the methodological research approaches commonly used in studies on accounting education games? 6). How can accounting education games enhance students concentration and accounting abilities?.

This research presents a comprehensive literature review using the Systematic Literature Review method, which has not been previously employed in studies on the use of games in accounting education, both in manual and digital formats. The main objective of this research is to provide a comprehensive literature review on the use of games in accounting education. The study aims to gather and analyze existing literature from reputable international journals to explore the various aspects and impacts of incorporating games in accounting learning. By synthesizing the findings and insights from previous studies, the research seeks to offer educators and practitioners a valuable resource to enhance their understanding of the potential benefits, challenges, and effective strategies associated with game-based learning in the field of accounting. This literature review contributes to the body of knowledge and serves as a foundation for further research in this area.

### ***The Relationship Between Accounting Knowledge and Skill with Games***

The analysis focuses on examining the relationship between accounting skills and games. Several studies have explored this relationship and have provided valuable insights into the impact of games on the development of accounting skills.

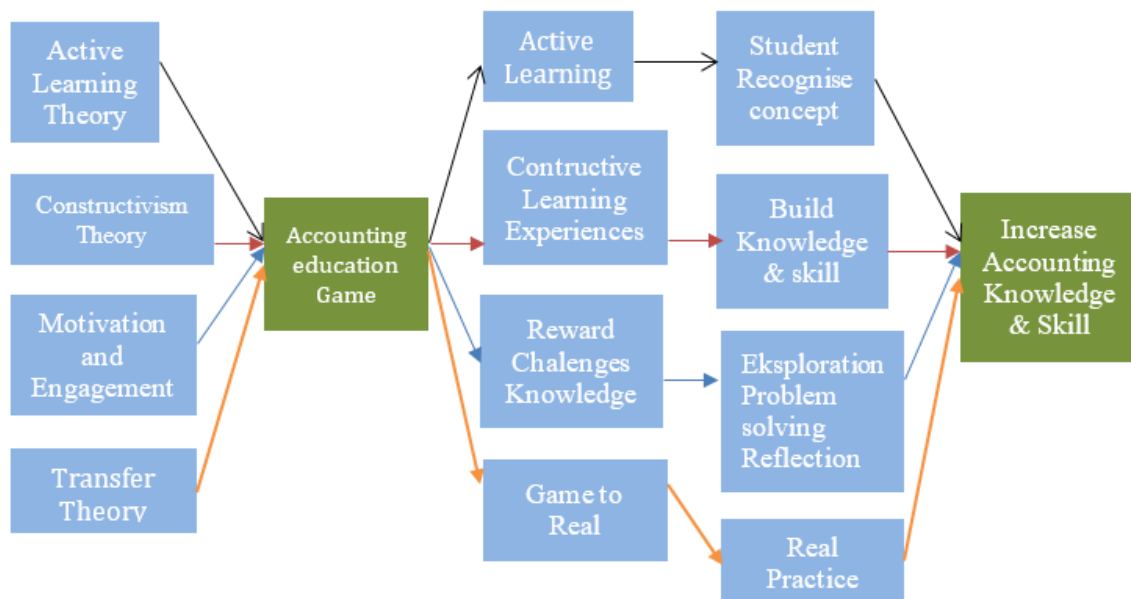
Firstly, a study conducted by Elo et al. (2023) investigated the effects of game-based learning on accounting skills. Their research involved a group of accounting students who participated in a game-based learning program, while another group followed traditional instruction. The results indicated that the students engaged in game-based learning demonstrated higher levels of accounting skill acquisition compared to the control group. This finding suggests that games can enhance the development of accounting skills through active and immersive learning experiences.

Secondly, a meta-analysis conducted by Carolyn Yang & Chang (2013) examined various studies on the relationship between games and accounting skills. The meta-analysis revealed a positive correlation between game-based learning and the improvement of accounting skills. The findings demonstrated that games provide a dynamic and interactive environment that fosters critical thinking, problem-solving, and decision-making abilities, which are essential components of accounting skills.

Furthermore, a longitudinal study by Moon & Wood (2020) explored the long-term effects of game-based learning on accounting skills retention. The study tracked the performance of accounting students who had engaged in game-based learning throughout

their academic journey. The results showed that the students who had experienced game-based learning consistently exhibited higher levels of accounting skills retention compared to their peers who had not been exposed to such learning methods.

In addition, a study by Elo et al. (2023) investigated the transferability of accounting skills acquired through game-based learning to real-world accounting tasks. The researchers examined the performance of accounting professionals who had undergone game-based training compared to those who had received traditional training. The findings revealed that the individuals who had received game-based training demonstrated higher efficiency and accuracy in completing accounting tasks, indicating the transferability of skills acquired through game-based learning to real-world accounting scenarios. The Theoretical Framework is present by figure 1.



**Figure 1.** The Theoretical Framework (Authors' elaboration: 2023)

Active Learning Theory suggests that learning involving active participation and direct experience can enhance students understanding and skills. In the context of this research, games can serve as an active learning method that enhances students engagement in understanding and applying accounting concepts. Constructivism Theory focuses on the active role of learners in constructing their own understanding through interaction with the learning environment. In the context of this research, games can provide a constructive learning experience where students can build accounting knowledge and skills through exploration, problem-solving, and reflection within the game environment.

Motivation and Engagement Theory highlight the importance of students motivation and engagement in the learning process. In this research, games can serve as a source of intrinsic motivation for students, as games provide challenges, rewards, and recognition that can enhance students interest and engagement in accounting learning. Transfer Theory focuses on students ability to transfer acquired knowledge and skills from one context to another. In this research, games can facilitate the transferability of acquired accounting skills.

Overall, these theories support the idea that games can be an effective method to promote active learning, constructivist learning, motivation, engagement, and transfer of accounting knowledge and skills.

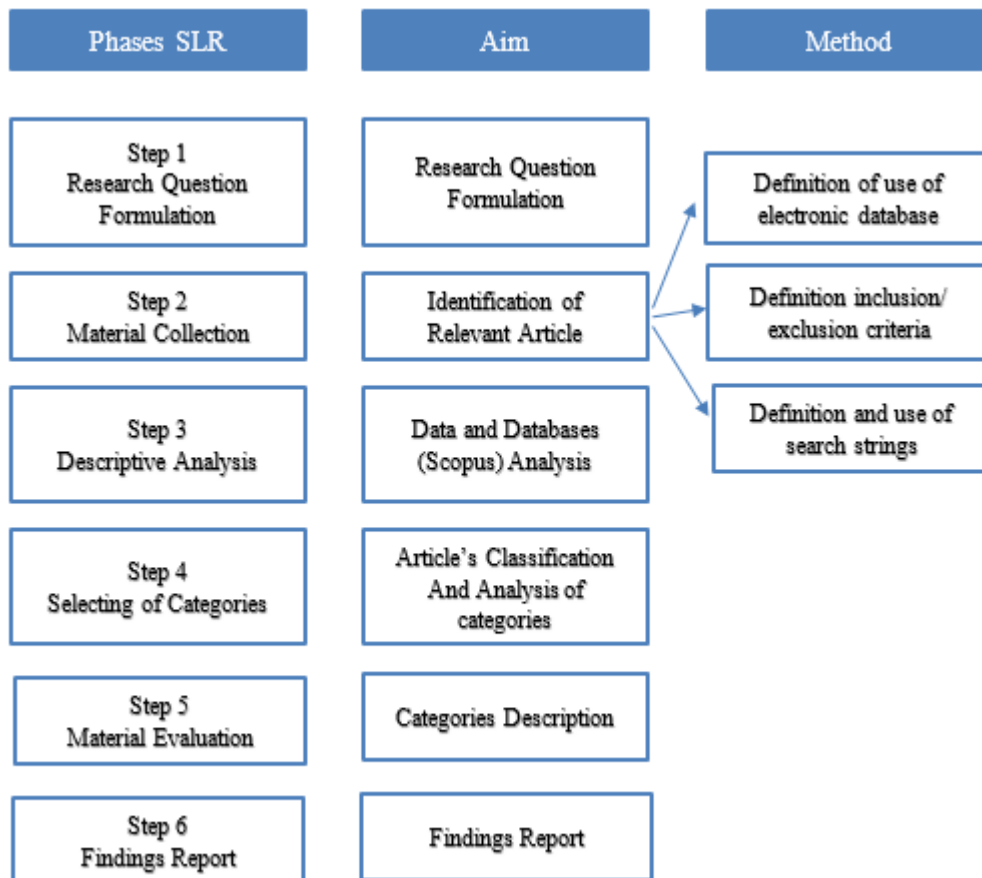
In conclusion, these studies collectively suggest a positive relationship between games and the development of accounting skills. Game-based learning provides an engaging and interactive platform that enhances critical thinking, problem-solving, and decision-making abilities necessary for accounting proficiency. It is evident that incorporating games into accounting education can contribute significantly to the acquisition, retention, and transferability of accounting skills.

## RESEARCH METHODS

This study proposes a Systematic Literature Review (SLR) to examine the correlation between Accounting Education and Games. The SLR employs a process of identifying and assessing specific research issues or study events. It entails the identification and evaluation of distinct research themes or study events. The SLR process, as derived from relevant literature, involves the following sequential steps:

- a. Formulating the research question;
- b. Collecting materials: identifying relevant sources and units of analysis;
- c. Descriptive analysis: evaluating the gathered materials;
- d. Selecting categories: identifying the study's categories and scope;
- e. Material evaluation: assessing the defined categories and dimensions to obtain research findings; and
- f. Findings Report.

The SLR process is depicted in Figure 2 below:

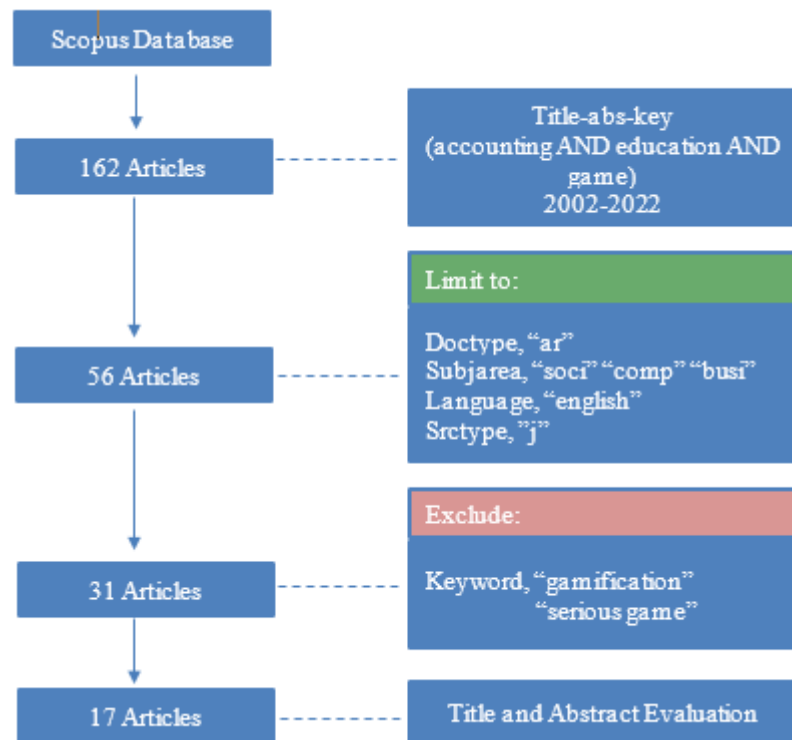


**Figure 2.** The SLR Process (Authors' elaboration: 2023)

### Collecting Materials

The collection of materials was carried out from Scopus database. On Scopus the research was conducted for "Title, keywords and abstract" with the date range "published from 2002 to 2022". The search was performed on Mei 25, 2023. The considered keywords are accounting and education and games, the selected source type were jurnal, the selected language were english, and the selected documents types were articles.

In the subsequent data filtering process in the Scopus database, a total of 56 articles were found by selecting the categories "Business, Management and Accounting," "Social Science," "Computer Science," and "Economics, Econometrics and Finance." Based on the consideration of keyword relevance to the author's topic, the author excluded the keywords "gamification" and "serious game," resulting in 31 filtered articles. Further investigation was then conducted on the titles and abstracts of each article to find those that were truly relevant to the author's topic. In the end, only 17 articles were found for further in-depth analysis. The process of identifying relevant articles is illustrated in Figure 3.

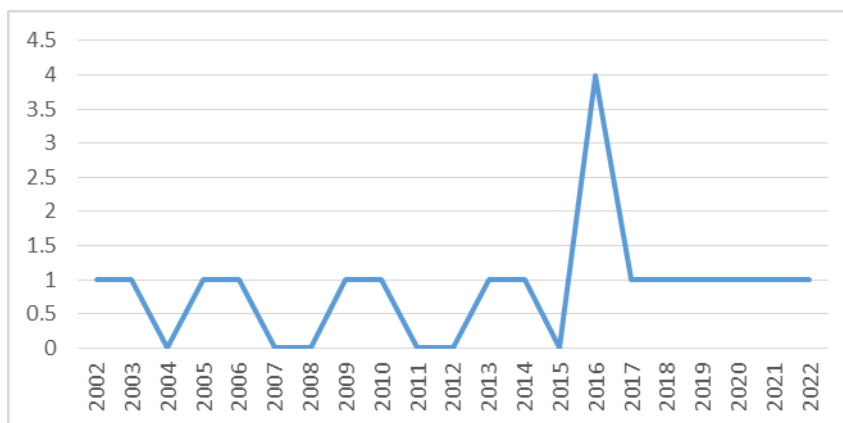


**Figure 3.** Identification of relevant articles process (Authors' elaboration: 2023)

## RESULTS AND DISCUSSION

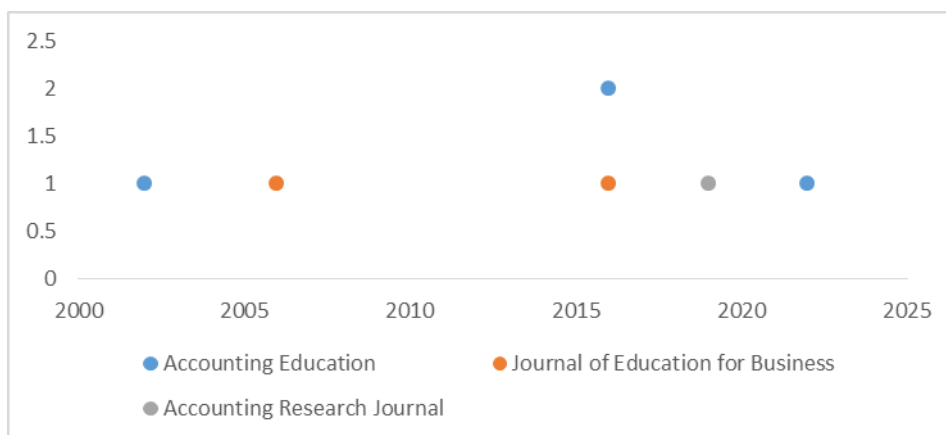
### Descriptives Analysis

Through a descriptive analysis, a descriptive-quantitative examination was conducted to assess the completeness of the available data. A total of 17 articles were successfully collected from the Scopus database and subsequently included in the research database. Upon examining the dataset, it becomes apparent that research on the topic of accounting education games is experiencing significant growth. This is evident as the highest number of publications related to these topics occurred in 2016. Although there was a decline in publications in 2017 until 2022, the number of publications on accounting education games experienced a have consistenly published in 2017 until 2022 (see Figure 4).



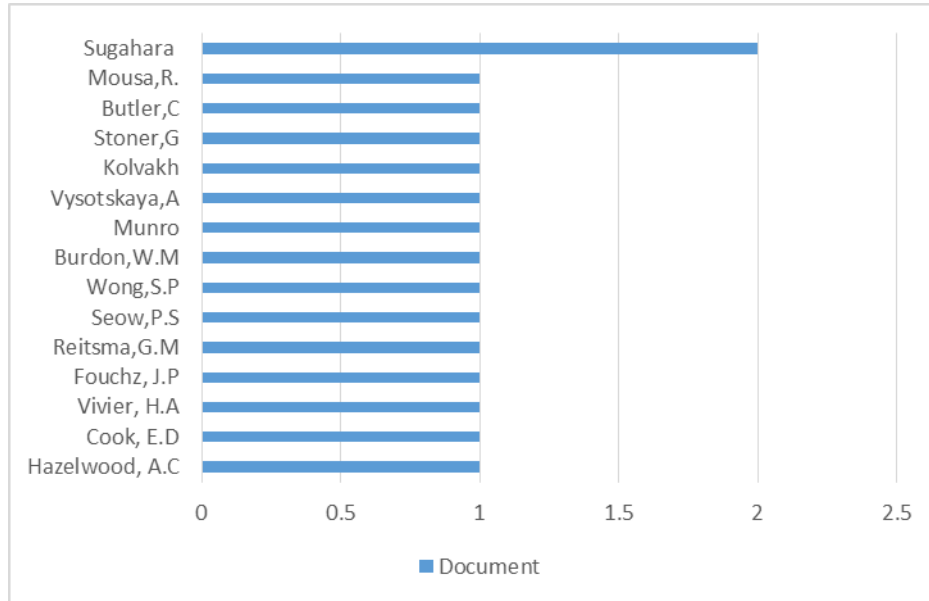
**Figure 4.** Number of publications for years (Authors' elaboration: 2023)

"Accounting Education" is the journal with the major number of publications of these topics (4), followed by "Journal of Education for Business"(2) and "Accounting Research Journal; Meditari Accountancy Research; The International Journal of Management Education; Journal of Entrepreneurship Education; Management Research Review; Internasional Accounting Studies; Journal of The Internasional Academy for Case Studies; Informing Science; Advances in Accounting; Journal of Higher Theory & Practice; and Accounting Prespectives"(1). Figure 5 shows Publications for Journal.



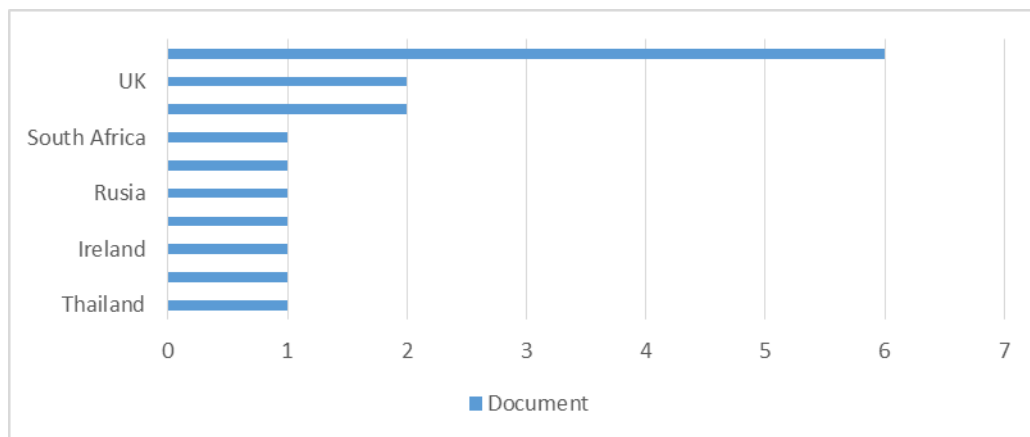
**Figure 5.** Publications for Journal (Authors' elaboration: 2023)

In writing articles on a specific topic, some authors will tend to write on relevant topics. Here are the Top 15 authors with the highest number of articles on accounting education games. The most prolific author is Sugara, S., with 2 articles written. In the Scopus database, other authors were found to have written articles on this topic only once. Figure 6 shows the author from articles.



**Figure 6.** The Author from Articles (Authors' elaboration: 2023)

The articles analyzed by the authors come from various countries. The country that produced the highest number of articles on the theme of accounting education games is the United States of America (USA) with 6 articles during the period from 2002 to 2022. This is followed by the United Kingdom (UK) and Japan with 2 articles published. Additionally, South Africa, Singapore, Ireland, Rusia, China, Canada and the Thailand each published 1 article during that time period. Figure 7 shows the article's country or territory.



**Figure 7.** The article's country or territory. (Authors' elaboration: 2023)

### Selecting categories

In this section, literature is analyzed in detail from 17 article. Table 1 shows the categories identified for this search. Some categories were defined through a partial analysis of documents, while others were identified after a further detailed analysis from title, abstract, content article. In particular, Table 1 shows for each category and structural dimension.

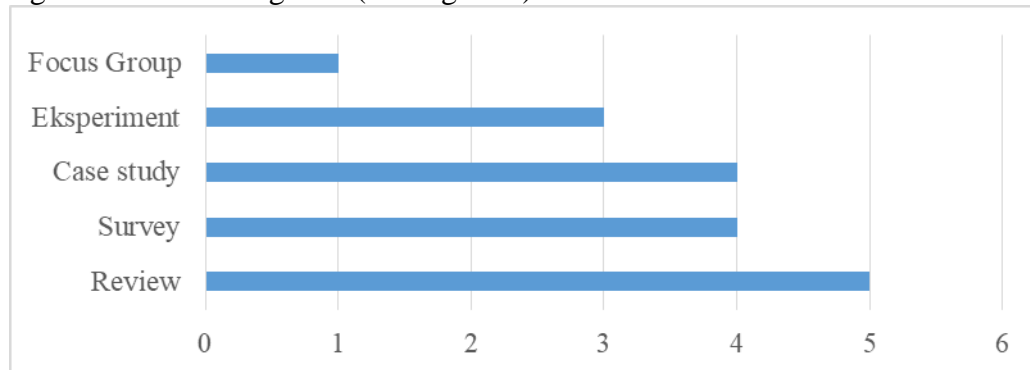
**Table 1.** Structural dimension and analytical categories (Authors' elaboration: 2023)

Structural Dimension	Analytical Categories
Methodological Research	Review
	Survey
	Case Study
	Eksperiment
	Focus Group
Cluster of Research	Accounting Games Implementation
	Accounting Education Strategy
Country of First Author	USA
	UK
	Japan
	China
	South Africa
	Singapore
	Rusia
	Ireland
	Canada
	Thailand

## Material Evaluation

### 1. Methodology research

The first dimension analysis is Methodological Research. The classification of the articles according to identified categories (see Figure 8).



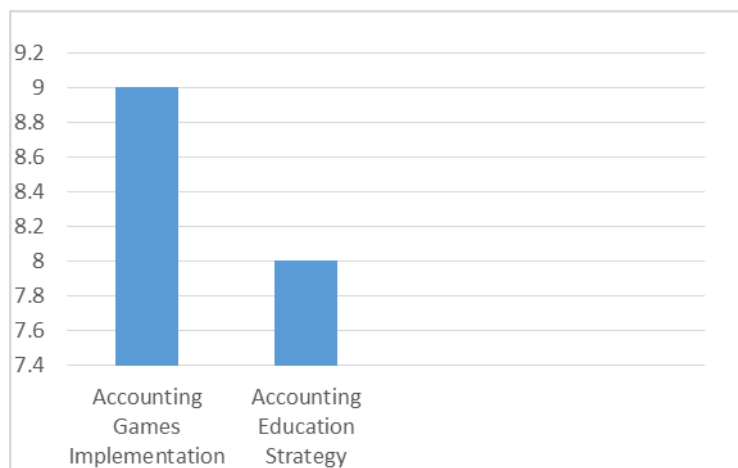
**Figure 8.** Research methodologies employed (Authors' elaboration: 2023)

The analyzed articles utilized various methodological research, with the most frequently employed methodology being "Review" (5), followed by "Survey" (4), "Case Study" (4), "Experiment" (3), and "Focus Group" (1).

### 2. Cluster

By analyzing the available papers, it is possible to identify two distinct study clusters. The first cluster focuses on articles that discuss the implementation of accounting games in accounting education, and this cluster is called "Accounting Games Implementation". The second cluster emphasizes articles that explore ideas or strategies to enhance accounting skills in the process of accounting education, and this cluster is referred to as "Accounting Education Strategy".



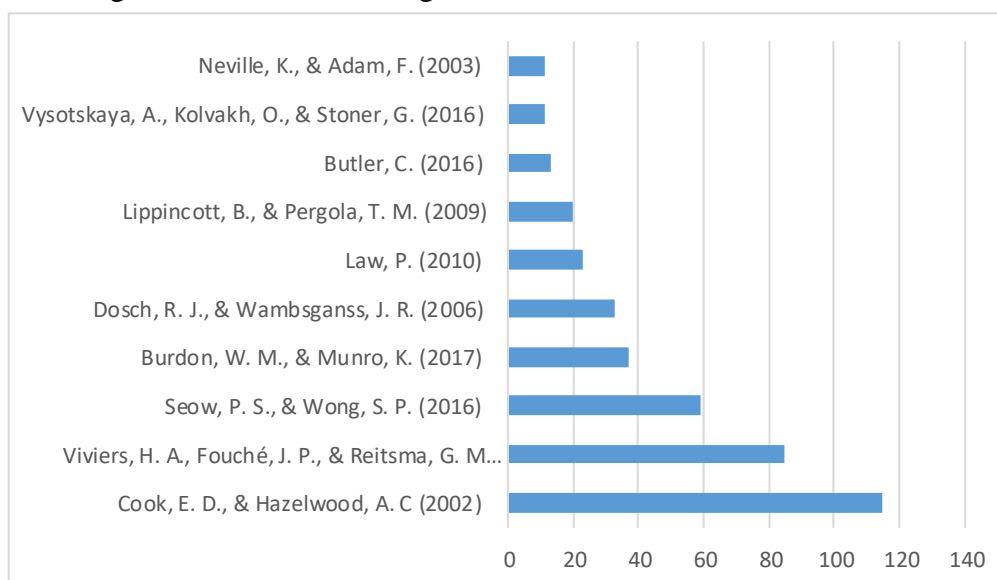


**Figure 9.** Clustersc (Authors' elaboration: 2023)

Figure 9 illustrates that out of the 17 articles available for in-depth analysis, the two study clusters are nearly balanced. Nine articles delve into the "Accounting Games Implementation" cluster, describing various game innovations that can be implemented in accounting classrooms. Meanwhile, the remaining eight articles examine "Accounting Education Strategy," addressing strategies for improving the quality of accounting education.

### 3. Citation

The high number of citations can indicate that the article has played a significant role in the development of research in the relevant field. In other words, high citations are often seen as recognition and acknowledgement of the intellectual contribution made by the authors of the article. Figure 10 illustrates the high citation counts of the available articles.



**Figure. 10** Citation Articles (Authors' elaboration: 2023)

The analysis reveals that the article by Cook & Hazelwood (2002) has been cited 115 times, followed by the article by Viviers et al. (2016) with 85 citations. In the third position is the article by Seow & Wong (2016) which has been cited 59 times. Following that, the article by Burdon & Munro (2017) has been cited 37 times. Lastly, among the top 5 most highly cited articles is the article by Dosch & Wambsganss (2006) with 33 citations. In the

top 10 articles with the highest citation counts, we have Law, P (2010) with 23 citations, Lippincott & Pergola (2009) with 20 citations, Butler (2016) with 13 citations, and Vysotskaya et al. (2016) and Neville & Adam (2003) each with 11 citations.

### **Discussion**

Games have been widely utilized as a teaching tool in accounting education to enhance students accounting skills and improve their overall learning experience. Different types of games have been employed to develop various accounting skills, such as teamwork, communication, decision-making, and problem-solving.

One type of game frequently used is accounting simulation games. These games provide students with a realistic environment where they can practice applying accounting principles and concepts. For example, the study by Cook & Hazelwood (2002) introduced the "Who Wants to Win... Some Mini Chips Ahoy?" game, which increased student enjoyment, class participation, and advanced preparation. The game incorporated visual-based instruction and active learning exercises, enabling students to actively engage with the material and enhance their understanding of accounting concepts (Cook & Hazelwood, 2002).

Another type of game is mobile gaming apps designed specifically for accounting education. Seow & Wong (2016) developed the Accounting Challenge (ACE) app, which received positive feedback from students who rated it favorably. The app enhanced students learning experience by providing a convenient and interactive platform for practicing accounting skills (Seow & Wong, 2016).

In addition to simulation games and mobile apps, role-playing games have also been employed to enhance students accounting knowledge and skills. Wongpinunwatana (2013) conducted an experimental investigation using a role-playing game to enhance information systems auditing knowledge. The game significantly improved participants' perceived knowledgeability, ability to perform tasks, and enjoyment of learning (Wongpinunwatana, 2013).

Furthermore, incorporating traditional games like Monopoly and soccer into accounting education has proven effective in engaging students and developing their accounting skills. Mousa (2019) addressed the core competencies outlined by the AICPA through the usage of the Monopoly board game. By utilizing the basic functions and features of Excel within the game, students were able to augment their financial accounting knowledge and enhance professional skills (Mousa, 2019). Lownie et al. (2014) applied principles of soccer training to the design and delivery of introductory accounting courses, making the classes more active and engaging for students.

The use of simulations and games in accounting education has significant benefits. Studies have found that teamwork, communication (listening and speaking), and time management skills are highly important in simulation games. However, aspects such as written communication, professionalism, and ethical awareness need more attention (Viviers et al., 2016).

Simulation audits have also proven to be beneficial, enhancing understanding of the audit process and practical skills (Burdon & Munro, 2017). There are challenges in recording transactions using simple game simulations as proposed by Vysotskaya (Vysotskaya et al., 2016). Additionally, the importance of accounting literacy as a foundation for developing effective decision-making skills is emphasized (Sugahara et al., 2022).

The PEG game allows participants to develop evaluation and probability-thinking skills (Butler, 2016). It actively engages participants in decision-making processes. Meanwhile,

simulations focusing on process flow and product accounting in job costing environments can improve students concentration (Lippincott & Pergola, 2009).

The application of new technology in accounting education will only be beneficial when supported by high-quality materials and high student motivation (Neville & Adam, 2003). Therefore, it is crucial to provide students with more opportunities to use new technology and gain hands-on experiences within the accounting curriculum (Sugahara et al., 2022).

A laboratory using simulations and games has been developed and implemented to enhance learning outcomes and knowledge retention in Principles of Financial Accounting. The laboratory has been proven to improve students financial accounting skills and satisfaction with the accounting course (Scalan & Huff, 2020).

In conclusion, the use of simulations and games in accounting education can enhance students critical thinking skills, teamwork, effective decision-making, and understanding of accounting processes (Viviers et al. (2016); Sugahara et al. (2022); Burdon & Munro (2017); Butler (2016); Lippincott & Pergola (2009); Neville & Adam (2003); Scalan & Huff (2020)). However, attention should also be given to aspects such as written communication, professionalism, and ethical awareness (Viviers et al., 2016).

## CONCLUSIONS

The use of various games in accounting education has shown positive outcomes in developing students accounting skills. Simulation games, mobile apps, role-playing games, and even traditional games have all contributed to enhancing students learning experiences and improving their accounting abilities. By providing interactive and practical learning opportunities, these games create an engaging environment that fosters active participation and deeper understanding of accounting principles and concepts.

## Recommendations

Based on the conclusion above, the recommendations for further research are as follows:

1. Testing the Effectiveness of Other Game Methods: Although many studies have shown the benefits of using games in developing accounting skills, further research can focus on testing the effectiveness of other game methods. For example, research can explore the use of simulations, board games, or mobile game applications in the context of accounting education. By testing various types of games, research can provide further insights into which game methods are most effective in enhancing students accounting abilities.
2. Comparative Research: Comparative research can help compare the effectiveness of using games with other teaching methods. For instance, research can compare learning outcomes between game-based approaches and traditional teaching methods or other learning approaches. Therefore, research can provide stronger evidence of the benefits offered by the use of games in the context of accounting education.

These recommendations are expected to contribute to future research in expanding our understanding of the use of games in developing students accounting skills.

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